

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Original) 1. A method of manufacturing a substrate with a plurality of concave portions, the method comprising the steps of:
forming a mask on the substrate;
forming a plurality of initial holes on the mask by means of a physical method;
and
forming the plurality of concave portions in the substrate by subjecting the mask with the plurality of initial holes to an etching process.
2. (Original) The method as claimed in claim 1, wherein the physical method includes blast processing.
3. (Original) The method as claimed in claim 2, wherein the blast processing is carried out using glass beads as blast media.
4. (Original) The method as claimed in claim 2, wherein the blast processing is carried out using blast media of which average diameter is in the range of 20 to 200 μ m.
5. (Original) The method as claimed in claim 2, wherein the blast processing is carried out by spraying blast media with the blast pressure in the range of 1 to 10kg/cm².
6. (Original) The method as claimed in claim 2, wherein the blast processing is carried out by spraying blast media so as to have a blast density in the range of 10 to 100kg/m².
7. (Original) The method as claimed in claim 1, wherein the mask is formed of Cr or chromium oxide as a main component thereof.

8. (Original) The method as claimed in claim 1, wherein the average thickness of the mask is in the range of 0.05 to 2.0 μ m.
9. (Original) The method as claimed in claim 1, wherein the etching process includes a wet etching process.
10. (Original) The method as claimed in claim 9, wherein the wet etching process is carried out using ammonium hydrogen difluoride or ammonium fluoride as an etchant.
11. (Original) The method as claimed in claim 1, further comprising the step of removing the mask after the etching process.
12. (Original) The method as claimed in claim 1, wherein the substrate is constituted from alkali-free glass.
13. (Original) The method as claimed in claim 1, wherein the plurality of concave portions are provided for microlenses.
14. (Currently Amended) A method of manufacturing a substrate with a plurality of concave portions, the method comprising the steps of:
 - forming a mask on the substrate;
 - forming a plurality of initial holes ~~on~~ in the mask by means of irradiation with laser beams; and
 - forming the plurality of concave portions on the substrate by subjecting the mask with the plurality of initial holes to an etching process.
15. (Original) The method as claimed in claim 14, wherein the mask is formed of Cr or chromium oxide as a main component thereof.

16. (Original) The method as claimed in claim 14, wherein the average thickness of the mask is in the range of 0.05 to 2.0 μ m.

17. (Original) The method as claimed in claim 14, wherein the etching process includes a wet etching process.

18. (Original) The method as claimed in claim 17, wherein the wet etching process is carried out using ammonium hydrogen difluoride or ammonium fluoride as an etchant.

19. (Original) The method as claimed in claim 14, further comprising the step of removing the mask after the etching process.

20. (Original) The method as claimed in claim 14, wherein the substrate is constituted from alkali-free glass.

21. (Original) The method as claimed in claim 14, wherein the concave portions are provided for microlenses.

22. (Currently Amended) A substrate with a plurality of concave portions, the substrate being manufactured by the method defined by claim 1 or 14, ~~a manufacturing method, the method comprising the steps of:~~

~~—— forming a mask on the substrate;~~

~~—— forming a plurality of initial holes on the mask by means of a physical method or irradiation with laser beams; and~~

~~—— forming the plurality of concave portions in the substrate by subjecting the mask with the plurality of initial holes to an etching process.~~

23. (Currently Amended) A substrate with a plurality of concave portions for microlenses, the substrate being manufactured by the method defined by claim 1 or 14, ~~a manufacturing method, the method comprising the steps of:~~

~~—— forming a mask on the substrate;~~

~~— forming a plurality of initial holes on the mask by means of a physical method or irradiation with laser beams; and~~

~~— forming the plurality of concave portions on the substrate by subjecting the mask with the plurality of initial holes to an etching process, the plurality of concave portions being provided for microlenses.~~

24. (Currently Amended) A microlens substrate with a plurality of microlenses, the microlens substrate being manufactured using a the substrate with a plurality of concave portions defined by claim 23 for microlenses, the substrate being manufactured by a manufacturing method, the method comprising the steps of:

~~— forming a mask on the substrate;~~

~~— forming a plurality of initial holes on the mask by means of a physical method or irradiation with laser beams; and~~

~~— forming the plurality of concave portions in the substrate by subjecting the mask with the plurality of initial holes to an etching process.~~

25. (Currently Amended) A transmission screen comprising:

a the microlens substrate with a plurality of microlenses defined by claim 24:

a Fresnel lens portion with a Fresnel lens, the Fresnel lens portion having an emission face and the Fresnel lens being formed in the emission face wherein the microlens substrate is arranged on the emission face side of the Fresnel lens portion; and

a light diffusion portion arranged between the Fresnel lens portion and the microlens substrate, ~~the microlens substrate being manufactured using a substrate with a plurality of concave portions for microlenses, the substrate being manufactured by a manufacturing method, the method comprising the steps of:~~

~~— forming a mask on the substrate;~~

~~— forming a plurality of initial holes on the mask by means of a physical method or irradiation with laser beams; and~~

~~— forming the plurality of concave portions in the substrate by subjecting the mask with the plurality of initial holes to an etching process.~~

26. (Cancelled)

27. (Original) The transmission screen as claimed in claim 25, wherein the diameter of the microlens is in the range of 10 to 500 μ m.

28. (Cancelled)

29. (Currently Amended) The transmission screen as claimed in claim-28 25, wherein the light diffusion portion is adapted to diffuse light so that the light is diffused on a substantially entire surface of the light diffusion portion.

30. (Currently Amended) The transmission screen as claimed in claim-28 25, wherein the haze value of the light diffusion portion is in the range of 5 to 95%.

31. (Currently Amended) The transmission screen as claimed in claim-28 25, wherein the glossiness of the light diffusion portion is in the range of 5 to 40%.

32. (Currently Amended) The transmission screen as claimed in claim-28 25, wherein the surface of the light diffusion portion has an irregularities comprised of roughly subulate concave portions.

33. (Currently Amended) The transmission screen as claimed in claim-28 25, wherein the light diffusion portion includes a resin sheet having one roughened surface.

34. (Currently Amended) The transmission screen as claimed in claim-28 25, wherein the diameter of the microlens is in the range of 10 to 500 μ m.

35. (Currently Amended) A rear projector comprising:
a- the transmission screen defined by claim 25;
a projection optical unit; and

~~a light guiding mirror, the transmission screen having a microlens substrate with a plurality of microlenses, the microlens substrate being manufactured using a substrate with a plurality of concave portions for microlenses, the substrate being manufactured by a manufacturing method;~~

~~wherein the method comprises the steps of:~~

- ~~— forming a mask on the substrate;~~
- ~~— forming a plurality of initial holes on the mask by means of a physical method or irradiation with laser beams; and~~
- ~~— forming the plurality of concave portions in the substrate by subjecting the mask with the plurality of initial holes to an etching process.~~

36. (Cancelled)